

Case Study #2: NT-proBNP

WHAT THIS TECHNOLOGY DOES

The N-terminal pro-B-type natriuretic peptide (NT-proBNP) test is a sensitive diagnostic blood test used to evaluate patients presenting with suspected heart failure. As a clinical triage tool, it measures biomarker levels released by the heart in response to stress. When a patient's NT-proBNP concentration falls below established clinical thresholds, such as the UK's [≥400 pg/ml standard](#), heart failure can be ruled out. This negative predictive value spares patients from requiring immediate, resource-intensive cardiac imaging through methods such as echocardiography.

NHS COST-SAVINGS AND PRODUCTIVITY

Implementing NT-proBNP testing dramatically reduces unnecessary referrals for echocardiography. Adopting the NICE-recommended NT-proBNP threshold of ≥ 400 pg/ml is the [most cost-effective diagnostic pathway](#) for the NHS. By filtering out true-negative cases in primary care, this strategy prevents large volumes of unnecessary specialist echocardiograms, saving an estimated [£4,400 per quality-adjusted life-year](#) (QALY) gained compared to relying on clinical judgement or echocardiogram approaches.

HOW IT SUPPORTS NHS TRANSFORMATION

Hospital to Community

This technology requires only a simple blood draw, eliminating the need for specialised equipment and technicians required for the current method, the echocardiogram. As a result, it can be conducted more easily in a community setting, bringing diagnosis closer to patients

Treatment to Prevention

NT-proBNP detects CVD at an earlier stage than echocardiograms, often before structural abnormalities are visible on an echocardiogram. This allows for timely intervention which reduces the risk of costly complications like heart attacks or strokes and supports the shift from treatment to prevention.

Analogue to Digital

Some blood-based biomarkers are being developed as digital biomarkers, leveraging advanced technologies and data analytics to measure the health of a patient remotely. This can be done in real-time and can also be integrated into NHS's digital infrastructure, making these biomarkers valuable in the NHS's shift from analogue to digital.

FURTHER EVIDENCE

Natriuretic peptide testing and heart failure diagnosis in primary care: diagnostic accuracy study, Taylor et al. (2023), British Journal of General Practice

The cost-effectiveness of NT-proBNP for assessment of suspected acute heart failure in the emergency department, Walkley et al. (2023), ESC Heart Failure

